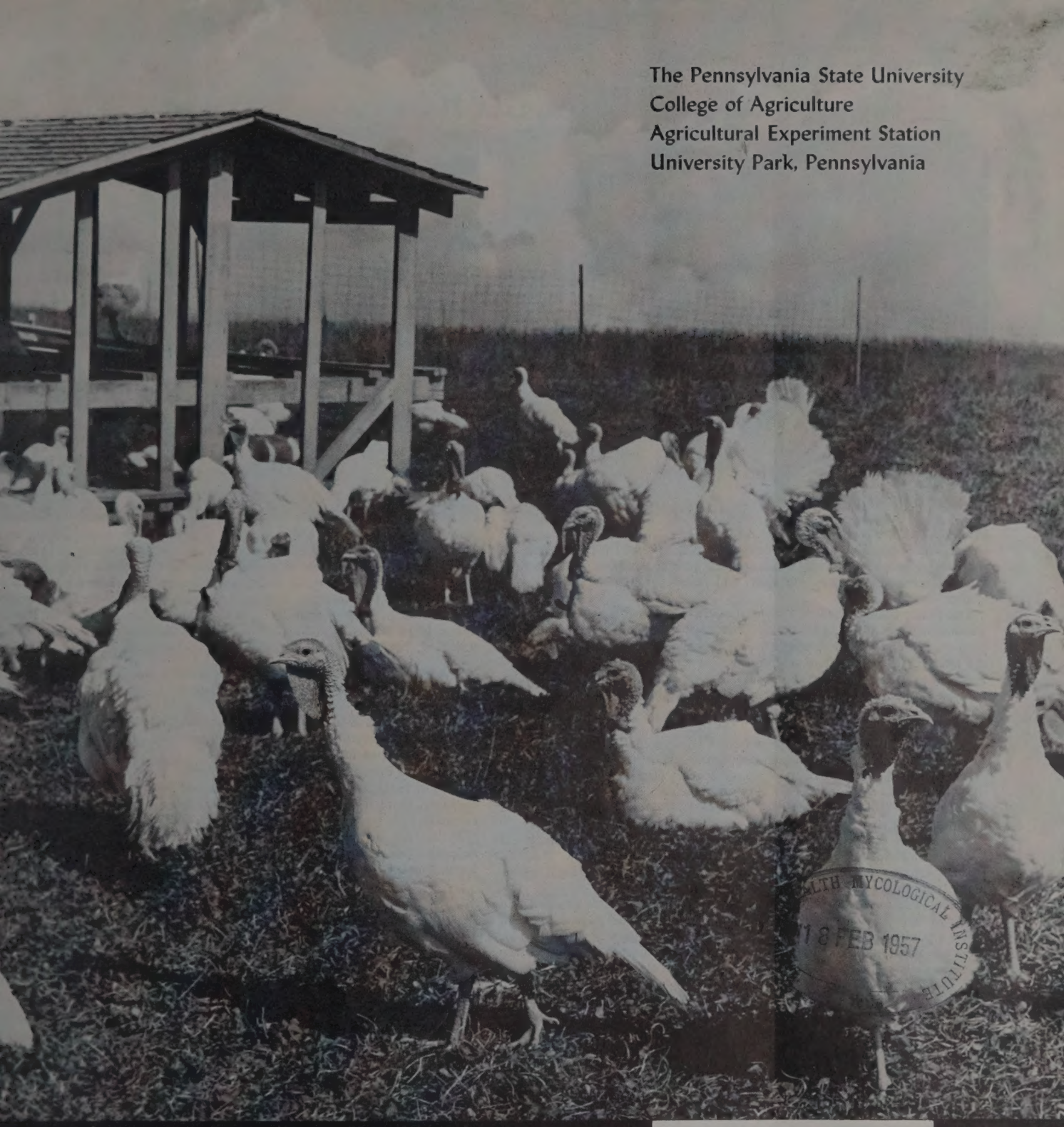
The Pennsylvania State University
College of Agriculture
Agricultural Experiment Station
University Park, Pennsylvania



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SCIENCE for the FARMER

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FEATURING

	page
Solar Poultry House	3
Continuous Freezer Operation	4
Written Timber Contracts	5
Viruses As Disease Agents	6
Careers in Poultry Husbandry	8
Egg Quality Research	11
Peck-order in Poultry	12
1957 Poultry Prospects	13
Milk Margins, Wage Rates	14
The Soil Bank	15

PENN STATE SWEEPS INTERNATIONAL.—Penn State entries swept the International Live Stock Exposition in Chicago with the grand champion steer, grand champion wether lamb, grand champion pen of three steers, reserve grand champion steer, and reserve grand champion pen of wether lambs.

The grand champion steer, shown above, a Shorthorn named Penn State Troubador II, sold for an all-time record high of $20.50 per pound. At 995 pounds, Troubador brought $20,397.50 to University Park for increasing the livestock program. The reserve champion, an Aberdeen-Angus named Penn State Eileenmere II, sold for $3.00 a pound. The grand champion was purchased by Greenbrier Hotel of White Sulphur Springs, W. Va., and the reserve grand champion went to Arbogast and Bastian, Allentown meat packers.

"Penn-Lad," the grand champion wether lamb, sold for $7.25 per pound to the Pittsburgh Steak House. At 116 pounds, he brought $841.00.

Dr. Lyman E. Jackson, Dean of the College of Agriculture, said the fine showing of Penn State reflects the improvement underway in the University livestock as a result of a special $100,000 state appropriation made in 1949 for improvement of beef, sheep and swine herds.

Shown here are Herman R. Purdy, Supervisor of Purebred Livestock; William L. Henning, State Secretary of Agriculture, on leave as Head of the Department of Animal Husbandry; Glenn R. Kean, Acting Department Head; and Richard S. Sour, Herdsman.

POULTRY HOUSING CONFERENCE.—Because of popular demand and nationwide interest in the solar type poultry house developed at Penn State, a poultry housing conference will be held February 26 and 27, 1957. Two years ago when a similar conference was held, more than 200 persons from 21 states came to Penn State to see first hand the Solar Poultry House and to join in a discussion of results. The group included poultrymen, representatives from the building trade, equipment manufacturers, and research and extension workers of agricultural colleges.

A tour is planned to the solar and conventional houses at the University farm so that flocks and housing conditions can be observed first hand. An up-to-date report of the performance of the two houses and flocks will be given. Research workers will demonstrate and illustrate the basic features of the solar type poultry house and explain fundamental principles of poultry housing.

COOPERATIVE SWEET CORN TRIALS.—Uniform trials of new sweet corn breeding materials now are being run in the Northeast Region as a result of a cooperative program among Agricultural Experiment Stations. This program will eliminate much duplication of labor, B. L. Pollack of the Department of Horticulture here believes.

Dr. G. F. Somers of the Delaware Station is administrative advisor to the program. Cooperating states are Maine, Massachusetts, Connecticut, New York, New Jersey, Delaware, Maryland and Pennsylvania.

ALBRECHT GRASSLAND CONGRESS DELEGATE.—Herbert R. Albrecht, Director of Agricultural and Home Economics Extension in Pennsylvania, attended the Seventh International Grassland Congress in New Zealand, November 6 to November 15. Dr. Albrecht was a member of the official United States delegation named by the State Department. He was one of three delegates awarded fellowships to the New Zealand meeting. These fellowships were provided by the Sixth Grassland Congress which met at Penn State in 1952. At that time Dr. Albrecht served as deputy secretary general.

NEW VEGETABLE TEAM.—A newly organized vegetable judging team placed fifth out of 12 teams competing at the annual meeting of the Vegetable Growers Association of America, November 30, at Grand Rapids, Michigan. William F. Smith, junior from Pittsburgh, ranked sixth among 48 contestants. Left to right, Richard L. Chamberlain, junior from Orangeville; Oscar E. Beck, junior from Lehighton; Smith; Richard G. Berlew, senior from Dallas; Martin L. Odland, Professor of Olericulture, coach; Ralph K. Pearson, Graduate Assistant in Olericulture, assistant coach.

NEW VET SCIENCE CENTER.—New research facilities to combat farm animal and poultry diseases in Pennsylvania will soon be in full operation at University Park.

Just completed is a new animal disease research building containing 17 isolation pens, seven laboratories, four offices, sterilization room, feed room, cleanup area and locker rooms.

A poultry disease research building, opened in 1954, has been used for studies of both poultry and livestock diseases. With completion of the new building, there will be separate facilities for poultry and livestock disease research, thus permitting expansion of research in both fields.

Spring will see the completion of an additional 5 isolation pens, an autopsy room, and an incinerator with a capacity of 300 pounds per hour for destroying carcasses.

TROPHIES APLENTY.—The dairy cattle judging team won top honors in judging Holsteins at the National and International Intercollegiate Dairy Cattle Judging Contests in Waterloo, Iowa, and Chicago. Seated are Earl E. Berger, senior from Lehighton, and Neil L. Bowen, senior from Wellsboro. Standing are Prof. William H. Cloninger, team coach; Gordon J. Miller, junior from Clarks Summit; and alternate George D. Peavey, junior from Warwick, N.Y.

GLENN O. BRESSLER*

SOLAR POULTRY HOUSE

Provides Key to Management Problems

DURING THE PAST FOUR YEARS it has been demonstrated in the Penn State Solar Poultry House that litter can be kept dry (15-25 per cent moisture) with pullets housed at 1 square foot of floor space per layer. Also, 75-85 per cent eggs can be produced clean. In the wintertime, a temperature around 55 degrees Fahrenheit can be maintained even though the outside temperature drops below zero. Slumps in egg production due to sudden drops in temperature have been eliminated. In the summertime, temperatures remain about the same as outside, when temperatures are between 90 and 100°.

This past year, May-hatched pullets housed at 1 square foot per layer in late October laid 173 eggs per pullet housed, or 196 eggs on a hen-day basis during a 10½ months period. When the flock was sold in early September to prepare the house for the next year's experiment, the flock was still laying at a rate of 56 per cent. Mortality during this period was 16 per cent, and 10 per cent of the flock was culled. Cannibalism accounted for most of this mortality.

By way of comparison, 55 pullets of the same strain and hatch housed at 3.4 square feet floor space per pullet in another house laid 190 eggs per pullet housed and 199 eggs on a hen-day basis. Mortality amounted to 10 per cent and no pullets were culled.

Mortality, although less than on the average commercial poultry farm, explains the lower rate of egg production in the solar house on a pullet housed basis. It should be recognized, however, that the performance of these two flocks (55 pullets at 3.4 square feet and 2,730 pullets at 1 square foot) cannot be considered a realistic comparison since a flock of 55 pullets would not be economically feasible on a commercial basis.

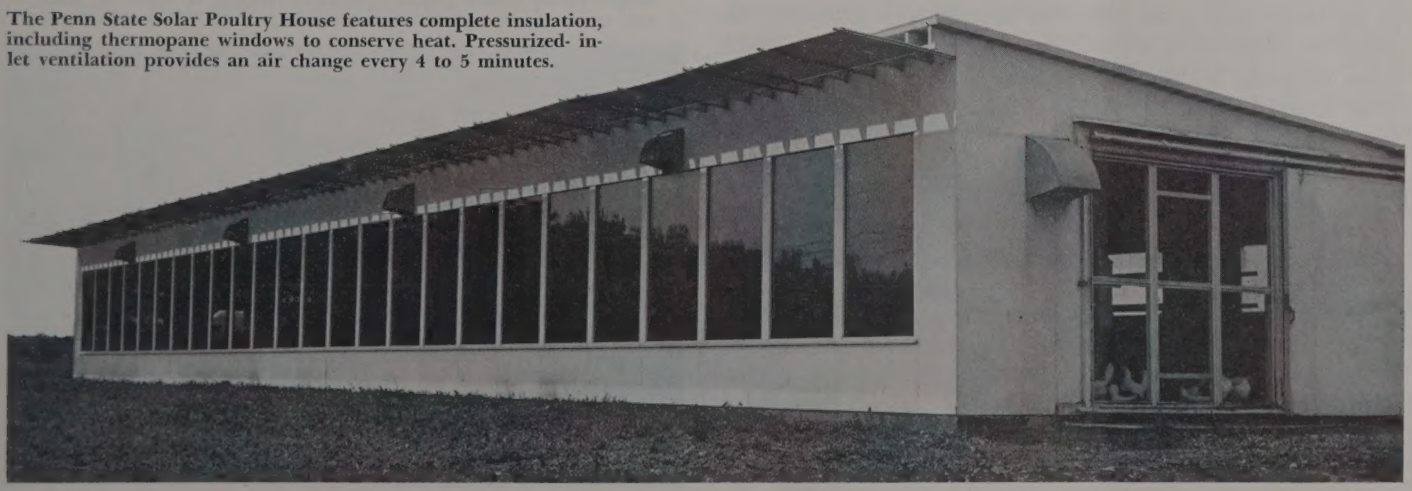
Conventional House in Operation.—To have a more meaningful comparison, a conventional house the same size as the solar house was built this past year. At present 2760 Single Comb White Leghorn pullets housed at 1 square foot floor space per pullet in the solar house are being compared with 920 Single Comb White Leghorn pullets of the same age and strain housed at 3 square feet in the conventional house. The purpose of the experiment is to determine which type of house and system of management would be the most profitable to the poultryman. This experiment should be of considerable interest to poultrymen who are faced with the problem of new house construction.

Automation in the Penn State Solar House has eliminated most of the chore work, except egg gathering. Many nuisance jobs such as window adjustment for ventilation have been eliminated. Windows are fixed and air is moved mechanically with thermostatically controlled pressurized fans. Labor requirements are about 1/3 those of the average commercial farm.

Solar House Features.—The solar house has four main features: (1) orientation of the house due South to take full advantage of sun heat; (2) thorough insulation, including farm building thermopane windows to conserve heat; (3) pressurized-inlet ventilation to provide an air change every 4 to 5 minutes or 2 cubic foot per minute per layer; and (4) arrangement of feeding, watering, and roosting equipment over a pit cleaned mechanically to increase collection of manure and provide an easy way for manure removal. It is the combination of all these features that make the solar house "click." In observing 70 solar poultry houses throughout the United States this past year, the author saw that short-cutting or eliminating any of the above features reduces the efficiency of performance of the house.

Plans for a 30-by-100-foot solar poultry house are now available. These can be obtained free by writing to the Pennsylvania Agricultural Experiment Station and requesting Station Progress Report No. 162.

* Professor of Poultry Husbandry.



The Penn State Solar Poultry House features complete insulation, including thermopane windows to conserve heat. Pressurized- inlet ventilation provides an air change every 4 to 5 minutes.

Work Tables at Proper Height Take Back-Ache Out of Sewing

HOME SEWING need not be an uncomfortable task if working surfaces are at proper height. This is the opinion of Kathleen A. Johnston and Ruth H. Smith, cooperating research workers in the College of Home Economics, and of 24 homemakers who assisted them in laboratory testing of sewing equipment.

Aching arms and back, the common complaints of seamstresses, may be relieved in a number of ways, these women found. Garments can not be cut out with ease on the kitchen or dining table, the bed or the floor. A special board or table about 36 inches high and not less than 56 inches long helps, tests showed. Height of cutting board should be varied to suit the user. Such a table may be constructed of plywood or other light material.

Position at Machine Important.—Most of the older, home cabinet sewing machines and some new ones do not allow the operator to sit directly in front of the needle when at work. The resulting posture puts a curve in the worker's spine and gives her a back and neck ache. This is not true of factory equipment.

Height of sewing machine table preferred by the women in these trials was 28 inches. Similarly, a chair height of 16 inches suited most workers. The machine needle should be 7 inches from the front edge of the table which should be at least 19 inches wide for good work. The women liked an overall table length of 40 inches with 20 inches to the left of the needle and 15 to the right.

U-shape Favored.—A U-shaped arrangement of equipment was favored by the women in setting-up a sewing area. With the operator facing her machine, in this plan she had an ironing board at sitting height to her left, or to her right if she was left handed. A low table to her left provided auxiliary space on which to keep partially finished work and tools. Cutting and fitting spaces were not included in this area.

Continuous Operation of Frozen Food Cabinets

CONTINUOUSLY OPERATING refrigerating units will be the next big improvement in domestic frozen food cabinets, John E. Nicholas, agricultural engineer, believes. Experimental models tested in his laboratory have provided low temperatures without the variability and fluctuations customary to cabinets operating under thermostatic control.

The experimental cabinets were commercial models in which the usual 1/3-horse-power refrigerating units and thermostats had been replaced by 1/6-horse-power continuously operating compressors without thermostats. Other minor changes were made in the cooling mechanisms to accommodate the smaller compressors, but operating costs in terms of electric power consumed were similar.

Freezer Burn Eliminated.—Temperatures in a frozen food cabinet, as usually equipped, are drawn down when the compressor operates to a point where it is automatically stopped by the thermostat. From that time temperatures gradually rise until the thermostat allows the compressor to start again. Since warm air holds more moisture than cold, the tendency is for stored food products to lose their moisture to the air in such cabinets from which it is deposited on the coils. This drying action, the major cause of "freezer burn," is prevented if the refrigerating unit operates all of the time.

Temperature, Food Quality Better.—Minus 20 degrees Fahrenheit, formerly thought desirable but unattainable at reasonable cost in commercial frozen food cabinets, may be provided readily by continuously operating the refrigerating unit, Mr. Nicholas has found. Temperatures inside cabinets equipped with the new units have tended to fluctuate very little and then only with temperatures outside. In a cool environment or with more insulation than presently used, frozen storage temperatures of minus 40 degrees are easily obtained, he says. Research shows that as temperatures reach -20° F or lower, the original vitamin content of foods are better maintained.

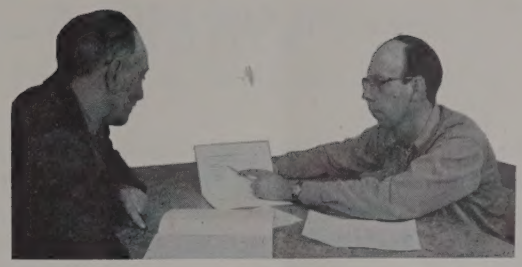
Likewise, temperatures vary from place to place inside commercial frozen food cabinets as usually operated. These variations, commonly of 5 to 10 degrees, are reduced to small proportions through the use of continuously operating refrigerating units.

Dependable, Long Lasting.—Equipment of this kind is considered as dependable and long lasting as thermostatically controlled units. Most wear and tear occurs in starting and stopping the refrigerating mechanism, Mr. Nicholas has observed. A complete report of his trials of continuously operating frozen food cabinets is found in Progress Report No. 163.

Project leader John E. Nicholas, right, records locations of thermocouple cables before testing a freezer. Helping is Mark D. Shaw, left, instructor in agricultural engineering.

Written Contracts —*How to Do Them*

C. E. Trotter, Alvi Voigt and N. A. Norton*



A WRITTEN CONTRACT could double your returns from sales of woodland products. A survey of 300 Pennsylvania producers indicated that the average price for stumpage sales made under a written contract was about double that received by producers using oral agreements. However, a majority of those who used written agreements also obtained bids for their products rather than accepting the first offer made.

When queried as to why they did not use a written contract, many producers indicated they had no idea as to how to proceed. So here are a few tips on writing a contract, whether it be for forest products or any other commodity.

Requirements Stated.—A written sales agreement may be as simple as a few notations made on a piece of wrapping paper. Requirements of law are satisfied if the agreement (1) specifies the material or property, (2) fixes the price, (3) identifies the buyer and seller, and (4) is signed by both buyer and seller.

In certain instances a written contract is mandatory. With few exceptions the law requires that contracts for over $500 must be written. Under the common law, a contract for the sale of standing timber, regardless of total value, must be in writing because standing timber is considered part of the land. However, the new Uniform Commercial Code, which became effective in Pennsylvania on July 1, 1954, provides that a contract for the sale of timber is a sale of goods (not part of the land) if the timber is to be cut by the seller, but an actual sale is not effective until the trees are felled.

Points of Disagreement.—The four points listed previously represent minimum contract specifications. There would be less chance for later differences if additional items are included. Numerous producers indicated that in past sales there had been disagreements over the following items:

1. Size, kind, quantity and location of timber removed.
2. Care of young growth.
3. Disposal of slashings.
4. Method of measurement to determine the quantity sold.
5. Time to complete the agreement.
6. Time of payment.

Frequently producers felt the buyer had cut timber other than that agreed upon orally. Therefore, size, kind and quantity to be cut, as well as the exact location of the timber should be stated specifically in the contract. If more than one species or kind of timber is to be harvested, each should be priced separately. Mixed lots tend to have their price set by the lowest quality in the lot.

Paint Splashes Recommended.—One method to check on the execution of this item of the contract is to mark the trees to be removed with two splashes of paint. One mark should be high on the trunk and the other so low it will remain on the stump after the tree is felled. A stump without a paint mark indicates a tree was cut that should not have been removed, and the buyer should pay a penalty, such as $10.00 per tree or double the contract price. All marked trees should be removed or paid for.

Sources of Information.—Your county agent, the Farm Foresters of the Department of Forests and Waters, Harrisburg, or the Extension Foresters from the Pennsylvania State University will instruct any farmer free of charge on the selection and marking of timber to be cut in order that the woodland will attain maximum growth and financial returns. These agencies also supply contract forms and aid farmers in executing timber sales agreements.

Care of Young Growth.—It is practically impossible to harvest standing timber without damaging some of the young growth. Damage can be minimized if as many trees as possible are cut to fall in the same general area. The contract should specify that trees not marked for cutting, but damaged during the felling of designated trees should be removed and paid for at an agreed upon price which shall be greater than the price for the material under contract.

Height of stump was another point causing dissatisfaction. Some operators were reported leaving excessively high stumps, thus wasting valuable timber. If the contract states that the stump should be under 12 inches or three fourths its diameter, whichever is larger, later disagreement is forestalled.

Disposal of slashings was mentioned as a problem more frequently than many other points. If the contract states that the tops of all trees should be removed to a minimum diameter, such as six inches, much of the wasting of timber reported by producers would be prevented. Other specifications should include the use of material classified as unmarketable under the contract, and removal of slashings from all streams, roads and rights-of-way for a distance of 50 feet.

Determining Timber Volume.—Many producers felt the volume of timber sold could be determined more accurately by felling the trees and then scaling the logs. If timber is to be sold by log scale, the contract should specify who does the scaling and the log rule to be used. In 1952, the State Legislature adopted the Scribner Rule as the official log scale for Pennsylvania. All timber 50 per cent sound should be scaled and accepted.

It is good business procedure for the seller to require a deposit of at least 10 per cent to be paid when the contract is signed. Subsequent payments should be made at specified times. The contract should include the final date when all timber must be cut, paid for, and removed from the property of the seller. A number of producers stated that they were left "holding the bag" when they did not attempt to collect payment until after the harvesting operation was completed.

* Assistant Professor of Marketing, Instructor in Agricultural Economics Extension, and Head, Department of Wood Utilization, respectively.

VIRUSES—Unique Disease Agents

JOHN S. BOYLE*

MOST OF OUR KNOWLEDGE of plant and animal viruses has accumulated during the past 60 years, although Pasteur unknowingly worked with an animal virus as early as the 1880's. Major contributions to our understanding of this unique class of disease agents have been made by scientists from numerous countries.

A plant virus may attack more than one plant species; likewise an animal virus may attack more than one kind of animal. As a result, viruses are of interest to plant and animal pathologists, medical research workers, physicians and veterinarians.

Pioneer Virus Findings.—That viruses are transmissible was first demonstrated by Adolph Mayer working with the tobacco mosaic disease in Holland. That viruses are extremely small was first proved by Iwanowski in 1892. A Polish scientist, he showed that the infectious part of the tobacco mosaic disease passed through a filter that held back tiny bacteria.

In 1935, an American chemist, W. M. Stanley, demonstrated that tobacco mosaic virus can be purified and crystallized, a form in which it is similar in appearance to other inert chemical compounds of similar protein structure.

Today many avenues are open to scientists studying the viruses. Much research to determine the chemical composition and method of reproduction of viruses is being conducted by skilled chemists. Their findings may give us a better understanding of the origin of life itself. Particle size, particle structure, optical properties and other physical characteristics are being investigated by physicists.

Unique Characteristics.—Several characteristics make the viruses unique as disease agents. Their small size makes it impossible to study them with the ordinary light microscope. For virus particles to multiply, they must be in the presence of living cells. This means that living plant or animal matter must be used in all virus studies. This feature puts certain restrictions on the research that can be done with virus diseases of man.

One of the most serious obstacles that confronts one engaged in virus disease studies is that of finding suitable plant or animal material with which to work. Plant or animal material may be expensive, large in size, slow in reaching a mature age necessary to be suitable for use, or possibly difficult to grow because of certain innate characteristics such as proneness to disease. However, since the very nature of viruses demands that they be grown in living plant or animal cells, somehow a suitable host with desirable characteristics must be found.

Cucumber Inoculations Hasten Research.—In 1948 it was found that young cucumber plants inoculated with crude juice extracts from sour cherry trees infected with the sour cherry yellow virus became diseased. The disease symptoms in cucumber were striking and leaves from infected plants were yellow-mottled while leaves from healthy plants were solid green. Where trees formerly had been used almost exclusively in studies made with the stone fruit viruses, it became possible to substitute the small, easily handled and rapidly growing cucumber plants. This materially hastened research because trees are relatively large and slow growing.

Continued studies with cucumber plants have given valuable information relevant to our understanding of the transmission of virus through cherry seeds, virus strains, and virus particle size and shape. Approximately 50 different virus diseases of cherries, peaches, plums, almonds and other stone fruits have been described. A well integrated program of research is being conducted throughout the United States to better understand and control these diseases.

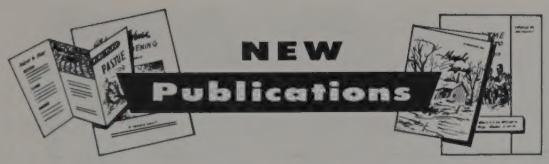
Since special techniques are required for the identification of plant or animal virus diseases, suspected cases of virus infection should be referred to research specialists located at the Agricultural Experiment Station.

* Associate Professor of Plant Pathology.

Leaves of sour cherry trees showing symptoms of ringspot. When an extract of leaves with these symptoms is wiped over the surface of young cucumber leaves, the virus is transmitted to cucumber.

A young cucumber leaf (cotyledon) showing the initial symptom of virus infection following inoculation with infected juice from sour cherry.

Three diseased and dwarfed cucumber plants with a normal plant. The viruses infecting these plants were transmitted from infected cherry trees.



BULLETINS

B 612. 69th ANNUAL REPORT OF THE PENNSYLVANIA AGRICULTURAL EXPERIMENT STATION. (For administrative use.)

B 613. 75th Anniversary of the JORDAN SOIL FERTILITY PLOTS. M. A. Farrell, F. J. Holben, J. W. White, A. C. Richer, C. D. Jeffries, H. W. Higbee, F. G. Merkle, W. I. Myers, F. E. Baer, Emil Truog, C. E. Millar, and J. Albert Woods.

B 614. EFFECTS OF THAWING AND REFREEZING ON THE QUALITY OF CERTAIN FROZEN FOODS. J. F. Cone, Mary L. Dodds, N. B. Guerrant, J. G. Heck, Jean H. Sabry, J. E. Nicholas, M. D. Shaw, and R. Q. Thompson.

PROGRESS REPORTS

PR 159. FROZEN TOMATOES. Jean H. Sabry, Mary L. Dodds, Mark D. Shaw, and J. E. Nicholas.

PR 160. WHY CO-OP MEMBERS BUY FEED WHERE THEY DO. Emory J. Brown.

PR 161. WHAT DO FARMERS THINK OF SODIUM METABISULFITE FOR PRESERVING GRASS SILAGE. Jerome K. Pasto, Mahlon K. Shoup, Emory J. Brown, and John W. Bratzler.

PR 162. PENN-STATE SOLAR POULTRY HOUSE. G. O. Bressler and H. V. Walton.

PR 163. NEW CONCEPTS IN FROZEN FOOD STORAGE CABINETS. J. E. Nicholas.

PR 164. A CONTINUOUS FLOW AUTOMATIC FEED GRINDER AND MIXER. R. P. Prince and E. F. Olver.

EXTENSION PUBLICATIONS

L 173 LET'S BUILD A SONGBIRD HOUSE. Robert G. Wingard.

L 174 SONGBIRD FEEDERS ARE FUN. Robert G. Wingard.

L 175 MAPLE SIRUP IS SPECIAL. Elsie Bamesberger and Charles Porter.

SpC 29 MAKE YOUR OWN DRAPERIES. Bonnie Dale Sansom.

AGRONOMY GUIDE FOR 1957. Extension and Research Agronomists.

Seed of Promising New Sweet Corn Probably Will Be Available in 1958

EXPERIMENTAL 5234 sweet corn has proved an excellent variety for market and home gardening. Although highly suitable for home freezing, 5234 is not suitable for commercial canners, in the opinion of B. L. Pollack, plant breeder for the Department of Horticulture.

This new sweet corn fits the present need for a good variety maturing between Carmelcross and Golden Cross Bantam. It can not be named and released by the Station until next year because commercial seed supplies must be built up. Present plans call for its release in 1958. Much of the basic breeding and testing of the variety was done by the late M. T. Lewis.

All Trials Favorable.—All reports from trials of experimental 5234 in 16 locations in the United States and Canada in 1955 were favorable. Similarly, results of all trials in the Northeast Region were favorable in 1956. The new variety was entered in 1956 in All America vegetable trials, in which it was tested in all parts of this country, but reports of its rating are not as yet available.

Varieties of sweet corn are being sought which are resistant to disease and are cold tolerant. Experimental 5234 is resistant to bacterial wilt, a troublesome disease to sweet corn growers in some seasons.

Grasses Obtain Necessary Nitrogen From Fertilizer as Well as Legumes

GRASS grown on a highly-fertilized field will produce as much or perhaps more forage for hay or silage as grass is likely to produce when grown in association with a legume. The protein content of grass from a well-fertilized area also may exceed that of the mixed grass-legume forage.

This information is of interest particularly to farmers in localities where diseases and insects make legume growing difficult. It is drawn from results of experiments conducted by J. B. Washko of the Department of Agronomy.

Key to heavy yields of grass of good feeding quality is a plentiful supply of nitrogen in the soil. This may be made available to the grass plants by growing a legume along with the grass, a common farm practice, or by supplying the nitrogen in commercial fertilizer.

Balanced Fertilizer Essential. — The general fertility of a field must be kept at a high level, however, to produce satisfactory yields of forage whether mixed grasses and legumes or grass alone is grown. Hence, phosphorus and potassium supplies may not be ignored. A soil test is the best indicator of lime and fertilizer needs when a forage crop is sown.

Most economical yields of dry hay or of protein were obtained in Dr. Washko's trials from yearly applications of 100 pounds of nitrogen per acre. Phosphorous and potassium needs were cared for in fall applications of 400 pounds of 0-20-20. Some indication has appeared in these tests of an advantage in splitting the nitrogen into two 50-pound treatments, the first being applied in spring and the second following the first cutting of hay.

Grass Alone Tops Yields. — In these trials, per acre yields of forage and also of protein were higher from highly fertilized grass alone than where the same grass was grown with alfalfa. Yields from the grass-alfalfa associations were higher than from grass-birdsfoot trefoil. Differences in yields among such grasses as orchard, smooth brome, timothy and reed canary were not great although orchardgrass headed the list. Yields from well fertilized plots were several times those from similar unfertilized areas on non-fertile soil.

REPORTS OF THE STATION

SCIENCE FOR THE FARMER is free to residents of Pennsylvania. If you are not already on the mailing list, print your name and address in the following blank. Space is also provided for you to request other publications. Clip and mail to M. A. Farrell, Director, Pennsylvania Agricultural Experiment Station, Room 108, Armsby Hall, University Park, Pennsylvania, or to your local County Agricultural Agent.

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Students learn how poultry meats are prepared for market.

POULTRY HUSBANDRY at Penn State

Inoculation of chicks becomes routine procedure in certain phases of poultry production.

THE POULTRY HUSBANDRY curriculu excellent opportunity for interested students to earn a living and how to live a life. The ta vided below shows that Penn State Poultr graduates have entered 11 diverse areas of emp including military service. The first 4 areas, w for 65 per cent of the 185 graduates, are prob likely areas of employment. Therefore, if you come a practical poultryman, or a product service employee for some large commercial c do research for a public institution or a pri the Poultry Husbandry curriculum will intere

High School Courses.—To qualify for admi Poultry Husbandry curriculum you must offe unit of high school algebra and one unit of pl Even more mathematics would be helpful, f in it (and English) is closely related to successf many college courses taken by Poultry Husba

Related College Courses.—Since it is impos pletely prepare for 30 to 50 years of living dur in college, one big problem of college studer choice of individual courses. The Poultry H riculum prescribes certain courses in the thr of knowledge affecting human welfare: biol physical science, and social science and th Thus, every Poultry Husbandry student r specific courses in fields like chemistry, zoo economics and poultry husbandry. He ma among others, such as accounting, animal be dairy production, psychology, and salesman quired courses insure exposure to a sound, ba with general application in Poultry Husban tive courses permit both freedom of choice a responsibility in working toward a special oc cultural goal.

Distribution of 185 Poultry Husban B.S. Graduates by Job Types

Commercial Poultry Production	
Feed Manufacturing, Sales and Service	
Industrial Manufacturing, Sales and Service	
Teaching and Research — College, University and Federal	
High School Teaching and Administration	
Finance, Real Estate and Insurance	
Merchandising — Wholesale and Retail	
Graduate Study	
Federal and State Poultry Regulatory Work	
Military Service — Temporary (11) and Perma	
Miscellaneous Activities Directly or Indirectly Agricultural	
Miscellaneous Activities Unrelated to Agricul	

* 111 or 60% exclusively or largely related to poultry prod

Here are some areas of study at Penn State

Top Left—More than 15,000 chickens of 6 breeds are grown annually by the Poultry Husbandry Department for use in teaching and research. This is a view of the new solar laying house.

Top Right—Study of organs helps in the identification of poultry diseases.

Center—From management research studies, students learn efficient methods of grazing 75 to 150 turkeys per acre.

Bottom Left—Beginners and practical poultrymen get much valuable information from short courses offered by the Poultry Husbandry Department.

Bottom Right—Poultry Husbandry students must have knowledge of basic biological processes.

BEETLES CARRY OAK WILT SPORES

OAK WILT is spread short distances through root grafts between diseased and healthy trees. The exact method of long distance spread is not known, but insects carrying spores from mycelial mats, appear to be the logical method.

Oak wilt fungus spores, found on bark and wood-boring beetles, have led C. L. Fergus and W. J. Stambaugh, of the Department of Botany and Plant Pathology, to suspect that these insects may carry the disease from tree to tree.

Mycelial mats are formed by the oak wilt fungus under the bark of dead and dying trees, and sporulation occurs mainly in Spring and Fall. Mat formation has been successfully prevented by peeling and "deep girdling" through mid-July. When insects pick up spores in the fall and overwinter in forest litter, the fungus is viable in spring and may be carried to healthy trees.

Living oaks within a 50-foot radius of trees found infected with wilt are frilled at their root collars and chemical tree killers are applied.

Difficult to Study.—Because the oak wilt fungus is of two compatability types that are cross-fertile but self-sterile, the disease has been difficult to study. Its life cycle and the method by which it spreads must be known, however, before much hope of control can be advanced.

Artificial inoculations attempted by Fergus and Stambaugh have not succeeded unless a free film of moisture has been present. Acidity of wounds does not limit invasion. Successful inoculations have been made up to 72 hours after wounding a tree, but not later.

Spot Eradication Expensive.—Spot eradication of the disease, to prevent further spread through root grafts where found, is an expensive process, according to records kept by W. R. Byrnes of the School of Forestry. Peeling of the trunks of affected trees has been the only reliable method used to prevent mat formation.

The average cost of cutting and peeling (eradication) where the treatment involves only the dead and dying trees has been $22.22 per spot. When healthy trees in a 50-foot radius of the diseased trees have been chemically killed, the average cost has been $26.45 per spot. When the trees in this eradication radius have been felled, peeled and cut into billets, the cost per spot has risen to $117.16.

Intense Treatments Vital.—Treatment of infected oaks without removal of neighboring healthy trees has been effective in preventing local spread of the disease in only 40 per cent of the cases. More intense initial treatments seem necessary to Byrnes. Where healthy trees within a radius of 50-feet of the infection have been destroyed, further spread through root grafts has been prevented in all but 10 per cent of the cases.

Research in oak wilt control is supported in part by Pennsylvania State Department of Agriculture funds.

Less Aggressive Roosters with Small Combs May Be Satisfactory Breeders

SELECTING AGGRESSIVE BIRDS for breeders is not recommended in poultry practice. At one time it was thought that the most aggressive birds with the largest combs were more vigorous, had more male hormone, and made the best breeders.

Findings at this Station indicate that males with normal male hormone may show wide differences in comb size and behavior. Injecting large dosages of male hormone into these birds failed to increase either comb size or success in winning fights, reports Edgar B. Hale of the animal behavior section.

Hormones Not the Answer.—The wide individual and breed differences in behavior observed here are not caused by differences in male hormone Hale adds. This is true although male hormone is essential for normal mating, crowing, and fighting behavior in roosters. The least aggressive males and those with small (but not pale) combs had adequate male hormone for normal mating.

Apparently the differences in behavior are caused by differences in the nervous system. Injecting male hormone into normal roosters will not change behavior. Aggressiveness is an undesirable characteristic in the breeding flock.

SCIENCE FOR THE FARMER

This illustrated publication of the College of Agriculture presents popular and semi-popular items on occurrences, findings and developments in resident instruction, research and extension. Issues appear quarterly for the use of leaders in agriculture and industries associated with agriculture who request to receive it. Farm operators in particular are invited to have their names placed on the mailing list.

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EGG QUALITY RESEARCH

WERNER J. MUELLER*

Measuring quality of broken-out eggs. A special gauge is used for measuring the height of the thick albumen. To facilitate the detection of bloodspots the apparatus on which the eggs are broken is equipped with two mirrors, one below and one behind the egg. Note color rotor at left which is used to determine yolk color.

IN ORDER TO MAINTAIN AND IMPROVE the position of eggs in today's highly competitive food market it is necessary to produce and merchandise a high quality product. High quality eggs are characterized by strong shells, plenty of firm albumen, round and well centered yolks, shown below, normal odor and flavor, and the absence of bloodspots or meatspots. A research program on egg quality problems was initiated at Penn State in the Spring of 1954.

In the first project the relationship between energy content of the diet and egg quality was investigated. A high energy diet, containing yellow corn as the only cereal, and a low energy diet, in which the corn had been replaced by barley and oats, were tested. Interior egg quality was determined by candling and by measurements on broken-out eggs, above. On two occasions eggs were candled first by four and then by three egg graders respectively. The candlers consistently gave higher grades to the eggs from the barley-oats diet.

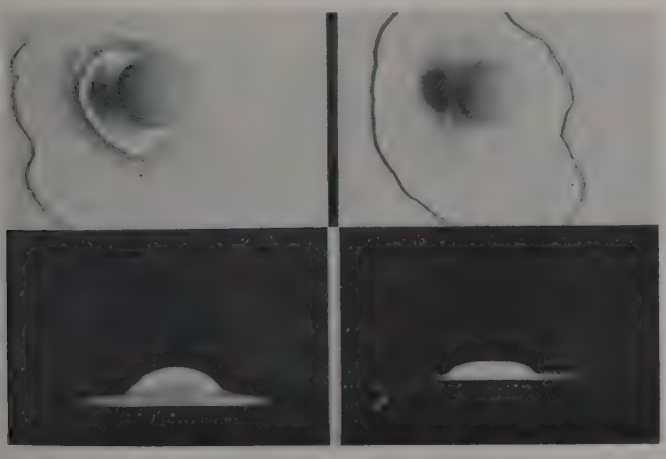
Albumen Quality Equal.—However, if albumen quality was determined on broken-out eggs no differences between diets were found. The only difference between eggs from the two diets, besides candled grade, was yolk color. Eggs produced on the barley-oats diet had lighter yolks than those produced on the corn diet. Since it has been shown repeatedly that yolk color affects candled grade it must be concluded that the differences in candled grade between eggs produced on the corn and barley-oats diet were caused by differences in yolk color.

Shell Porosity Considered.—Another project still in progress deals with the effect of shell porosity on quality loss of eggs during storage. Porosity is a very important shell characteristic. It controls the loss of water and carbon dioxide of market eggs during storage. It also affects the gas exchange of the growing embryo. The picture below illustrates the variation of shell porosity among eggs from different hens.

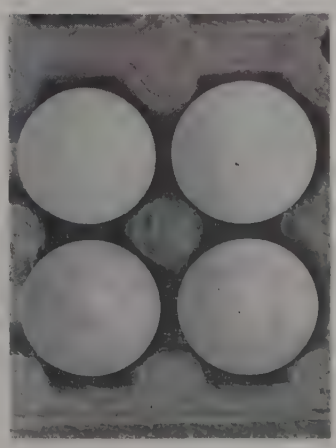
Relative Humidity Studied.—Evaporation of water from eggs during storage is controlled not only by shell porosity but also by the relative humidity of the storage environment. In experiments which have just been completed the effect of relative humidity on egg quality after storage has been studied. One set of 56 eggs was stored for 14 days at 54 degrees Fahrenheit and another set of 56 eggs for 4 days at 100 degrees. At each temperature 7 different relative humidities ranging from 0 per cent to 90 per cent were maintained.

Within the tested range, relative humidity had no effect on albumen and yolk quality after storage. The only egg characteristic which was affected by relative humidity was air cell size. That air cell size is a poor indicator of egg quality has been known for some time. For this reason attempts have been made to eliminate this characteristic from the Official Standards of Quality. These results show that if this were done relative humidity during storage would be of no concern. Since this would permit the use of low humidity the danger of mold and bacteria infections would be greatly reduced.

* Assistant Professor of Poultry Husbandry.



At left an egg of high interior quality. Note quantity of firm albumen and yolk which is well rounded. At right an egg of low interior quality. The albumen is watery and the yolk is flattened.



At top two half egg shells with few pores, at bottom two half egg shells with many pores. To stain the pores the warm eggs were placed in cold methylene blue solution for two minutes.

Peck-Order and Egg and Meat Production

EDGAR B. HALE*

IN THE EARLY TWENTIES a young Norwegian with the intriguing name of Schjelderup-Ebbe discovered the peck-order in chickens. He noted that in a typical small flock one bird pecked all the others, but none of the others pecked it. Another bird was pecked by the first bird only and in turn pecked the remainder of the flock. Finally, there was the bird at the bottom of the peck-order. This bird was pecked by all the other birds in the pen and none were left for it to peck.

Poultrymen now know that physical environment is only a part of the bird's world. A bird's social environment — that provided by other chickens — is also important and under certain conditions may influence growth or egg production. An individual bird's position, high or low, in the peck-order determines its freedom to move about the pen and its access to food and water. The high ranking birds have an advantage over the low ranking ones. Turkeys have a well developed peck-order just as do chickens.

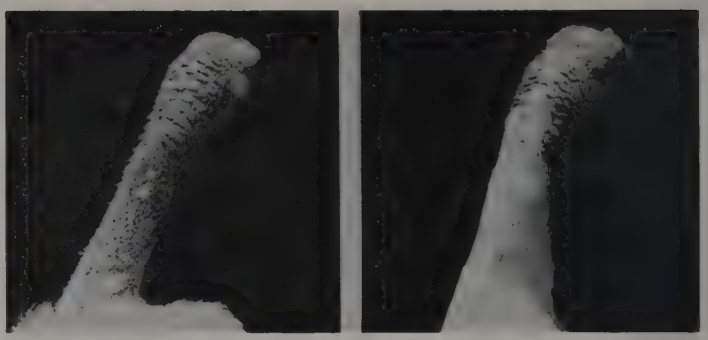
Comparing Strains, Breeds, or Crosses.—When poultry strains or crosses are compared for meat or egg production, as in official Random Sample Tests, one problem is to provide a uniform environment for all strains compared. A uniform physical environment can be provided by mixing the birds in the same pen. In this way all birds are subjected to the same temperature, humidity, light, etc.

Does this same procedure provide the different strains with a uniform social environment? The answer, as provided by findings at this Station, seems to be no. What does happen to the peck-order when strains, breeds, or crosses are mixed in the same pen?

The peck-order in small flocks with two breeds of hens in the same pens has proved interesting and unexpected. One might anticipate that some birds from each breed would be high in the peck-order and others low. But this is not what happens. Instead, the birds of one breed usually peck all the birds of the other breed. This means one breed is at a disadvantage since all hens of that breed are low in the peck-order.

Fights between two birds from different breeds explain this unusual situation. When two strange birds are placed together the peck-order is established by fighting, or one of the birds may submit to an attack by the other without fighting back. Thereafter the winner pecks the submissive bird without fear of being pecked in return. When meeting strangers of its own breed, a hen determines its peck-order position with every bird by repeating the above procedure. This does not happen if the strangers are from different breeds. For example, if a Barred Plymouth Rock hen loses a fight to a New Hampshire hen she will thereafter submit to all New Hampshire hens even though she has never seen them before. This means that one aggressive hen in a breed can win enough fights for her breed to dominate the other breed completely.

* Associate Professor of Animal Behavior.



A glance at the neck of a turkey hen provides a good estimate of her position in the peck-order. The bird on the left with all the feathers missing from the neck was pecked by all the hens in her pen. The one on the right was pecked by none.

Turkey Hens Show Peck-Order.—Observing the giving and receiving of pecks in large flocks requires considerable time. Therefore, we are interested in faster methods of measuring the social environment of a bird. Fortunately, turkey hens provide us with a quick picture of the relative number of pen-mates that peck. A hen at the top of the peck-order in a pen of 20 hens is shown in the accompanying picture. Her neck shows the normal growth of feathers. The hen beside her was at the bottom of the peck-order and all the feathers have been plucked from her neck. The size of the area without feathers gives a good estimate of the number of birds pecking a particular hen.

This technique was used to measure the social environment of three varieties of white turkeys housed together. Birds with all feathers removed were given a score of 21, and those with all feathers present a score of 0. On this basis one variety had an average score of 2.4 compared with an average of 12.6 for one of the other varieties. Again, although these birds were housed together, one variety had a less favorable social environment and was at a disadvantage in any comparisons on performance tests.

These results emphasize the need to be alert to possible differences in social environment as well as physical environment if tests of performance are to provide the information we want.

Farmers Approve of Bisulfite As Grass Silage Preservative

INDIANA COUNTY FARMERS who used bisulfite to preserve grass silage are better satisfied with grass silage as a dairy feed than non-users of bisulfite. Everyone in the county who put up grass silage in 1954 was interviewed in 1955 by Jerome K. Pasto, Mahlon K. Shoup or Emory J. Brown of the Department of Agricultural Economics, or by J. W. Bratzler of the Department of Animal Nutrition.

Farmers who had previous experience with bisulfite or with other preservatives showed a marked preference for bisulfite. They adopted bisulfite because they felt that it was easy to apply and contributed to good quality silage. A full report of this survey is presented in Progress Report 161, available at County Agents' offices on request.

1957 Poultry Prospects

KERMIT BIRTH*

PRODUCTION of eggs, broilers, and turkeys in 1957 is expected to exceed the record proportions of 1956. With the possible exception of broilers, prices are likely to average a little lower in the year ahead.

Record production will be based on three main economic considerations:

- Rapid development of cost-cutting efficiencies in the poultry industry.
- Financing arangements that are firmly established in poultry meat production—broilers and turkeys—which seem to be taking hold in egg production.
- Drive on the part of individual poultry farmers to earn more income.

The effects of these economic developments upon the prices received by farmers for eggs, chickens including broilers, and turkeys has not been favorable.

Average egg prices in early 1957 are expected to be well below the same period of 1956. Egg production from now to mid-1957 will be from a flock about as large as a year earlier and one that will be producing at a higher rate per bird.

Chickens raised next spring will be almost as many as the 472 million in 1956. Unfavorable egg prices this winter may encourage some reduction in chicks purchased for flock replacements next spring.

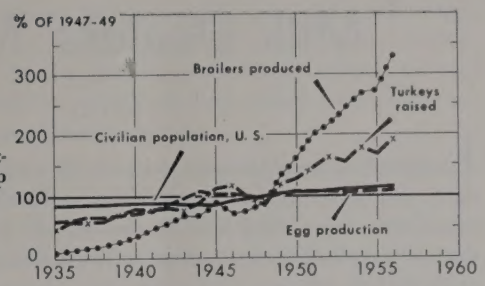
The trend toward more specialization in egg production limits flexibility in the use of resources. This specialization and the development of financing arrangements tend to keep up laying flock replacements even when egg prices are unsatisfactory to many producers.

Pennsylvania producers are also faced with higher quality eggs from many of the more highly specialized and financed egg operations developing in many sections of the nation.

Broiler Output Breaking Records.—Broiler output in 1957 promises to be higher than the 1.3 billion broilers produced in 1956. Prices are expected to be slightly higher than the very low prices received in 1956. Red meat supplies will be down slightly and because the experience of recent years has shown that moderate annual increases in supply—short of the more than 20 per cent of 1956—can be absorbed in the expanding market.

Continued record-breaking production is expected because of the widespread practice of "financing" and "vertical integration" of the broiler industry. When producers are "financed," their out-of-pocket loss from the enterprise is reduced or eliminated. Many financing arrangements transfer most of the risk of price change from the producer to feed companies or other outside agencies. In "vertical integration" all operations of breeding, hatching, feed mixing, rearing, processing and marketing are under one management.

Turkey Production High.—A record crop of over 76 million turkeys was produced in the nation in 1956. Prices received in late 1956 were below those of a year earlier.



Poultry meat production continues sharp uptrend.

Prices received through late summer 1957 are expected to remain sharply lower than those received in the same period of 1956.

Turkey raising also is encouraged by financing which keeps production above levels that would be supported by farmers' other credit resources. Farmers holding turkey breeder hens of the heavy types reported intentions to keep 16 per cent more such birds on January 1, 1957, than a year earlier. These intentions indicate a larger supply of hatching eggs and of poults in 1957 than in 1956. A larger proportion of the crop than in 1956 will be heavy, breed types, particularly white-feathered heavy breeds.

Consumer Prospects.—Consumers will find a continued large supply of eggs, chicken, and turkey at prices near those of 1956. Total consumption of eggs and poultry meat will increase. Business activity and consumer spending will remain high and population is growing.

The egg-laying flock won't have to expand as fast as population growth because continued increases in rate of lay per bird will add considerably to future egg output. Broiler and turkey production will have further expansion. Poultrymen have demonstrated a willingness to produce in response to a price which makes poultry at retail competitive with pork and beef.

* Assistant Professor of Agricultural Economics Extension.

SHORT COURSES IN AGRICULTURE

HUNDREDS of Pennsylvanians yearly attend one or more of the short courses presented by the College of Agriculture of The Pennsylvania State University. New courses are being added and old courses are remodeled as a means of meeting the needs of farmers and persons in occupations related to agriculture. More information can be secured concerning the following short courses by writing to the Director of Short Courses, College of Agriculture, University Park, Pa.

SHORT COURSE TITLE	DATES
Testing Milk and Cream	Jan. 7 to Jan. 12, 1957
Ice Cream for Plant Men	Jan. 14 to Jan. 26, 1957
Rural Electrification	Jan. 21 to Jan. 25, 1957
Market Milk	Jan. 28 to Feb. 9, 1957
D.H.I.A. Supervisor Training	Jan. 30 to Feb. 13, 1957
Dairy Farming	Jan. 30 to Feb. 27, 1957
Grassland Farming	Feb. 18 to Feb. 20, 1957
Sheepmen	Feb. 25 to Feb. 27, 1957
Feed Dealers and Millers	Mar. 4 to Mar. 8, 1957
Beef Cattle Herdsmen	Mar. 5 to Mar. 7, 1957
Lumber Grading and Inspection	Mar. 11 to Mar. 15, 1957
Dairy Cattle Herdsmen	Mar. 25 to Mar. 29, 1957
D.H.I.A. Supervisor Training	May 1 to May 15, 1957
Rabbit Industry	June 21 to June 22, 1957
Mushroom Industry	June 24 to June 27, 1957

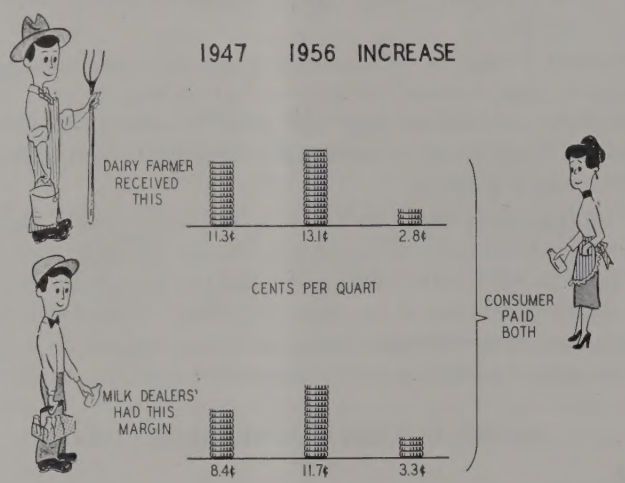
Milk Dealers' Margins and Wage Rates of Labor

C. W. Pierce*

LABOR is the principal cost item of milk distributors, other than the payments to farmers for milk. Wage payments to labor take more than half of the margin between what milk dealers pay farmers and what milk consumers pay dealers for milk. Labor expenses fall primarily into two categories, plant labor and route labor.

In the Pittsburgh marketing area of Western Pennsylvania, the dealers' margin on a quart of regular milk delivered to homes has increased from 8.4 cents in 1947 to 11.7 cents in 1956, figure 1. This increase amounted to 39 per cent. During the same period the dealers' margin on a quart of regular milk sold to stores for resale to consumers rose from 6.9 cents to 9.2 cents, an increase of 33 per cent.

Fig. 1.—Changes in the price of a quart of regular milk delivered to homes in the Pittsburgh area, 1947-1956.



Wage Rates Increase.—The widening margins on milk during recent years have been accompanied by even more rapidly increasing hourly wage rates to plant employees, figure 2. Between early 1947 and September 1, 1956, cash wages of skilled labor increased slightly more than one dollar per hour, an increase of nearly 100 per cent, table 1. Similar changes occurred in cash wages paid to other plant employees. Beginning in May, 1952, fringe benefits have been added to labor costs. Some of these are difficult to evaluate but in total they appear to have added 21 cents per hour. These fringe benefits amount to approximately 10 per cent of the present cash wage rates.

Wages paid to routemen have risen during recent years similarly to the increases in wage rates of plant employees. Routemen are paid either a daily guarantee or commissions on sales, whichever figure is higher for the month. Daily guarantees and their effective dates were as follows:

May 1, 1946 — $ 8.33
May 1, 1948 — 9.00
May 1, 1949 — 10.00
May 1, 1950 — 12.50
May 1, 1952 — 13.00
May 1, 1954 — 15.60
May 1, 1956 — 16.00

* Professor of Agricultural Economics.

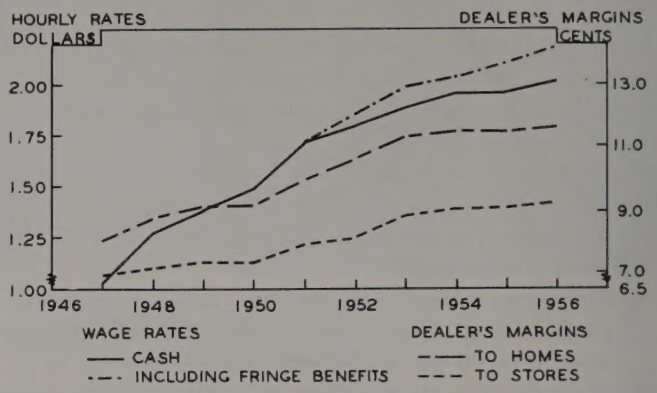


Fig. 2.—Wage rates paid to skilled labor in milk plants and dealers' margins on a quart of regular milk, Pittsburgh area, 1947-1956.

The daily guarantee after May 1, 1956 has been 92 per cent greater than in 1947. Because route labor receives a considerable part of its wages as commissions, payments to individual routemen vary with the volume of their sales.

Labor and other costs have increased in industries which supply milk dealers with such items as equipment, containers, supplies and fuel. Consequently, milk dealers have had to pay increased prices for a majority of the items used in the processing and distribution of milk.

Dealers Caught in Squeeze.—With wage rates nearly doubling, with all kinds of equipment and supplies becoming more expensive and with margins increasing only 40 per cent, milk dealers, like farmers, have been caught in a price cost squeeze. In order to pay higher wage rates without equivalent gains in

Table 1.—Hourly wage rates of dairy plant employees, Pittsburgh market area, Pennsylvania.

Effective Date	Classification of Employee				
	Foremen	Skilled	Semi-Skilled	Non-Skilled	Janitor
May 1, 1946	$1.15	$1.09375	$1.06875	$1.0125	$ .925
May 1, 1947	1.275	1.21875	1.19375	1.1375	1.05
May 1, 1948	1.355	1.29875	1.27375	1.2175	1.13
May 1, 1949	1.435	1.37875	1.35375	1.2975	1.21
May 1, 1950	1.566	1.506	1.477	1.416	1.32
Nov. 1, 1950[1]	1.7225	1.65625	1.625	1.5575	1.4525
May 1, 1951[2]	1.8025	1.73625	1.705	1.6375	1.5325
May 1, 1952[3]	1.8825	1.81625	1.785	1.7175	1.695
May 1, 1953[4]	1.9825	1.91625	1.885	1.8175	1.795
May 1, 1954[5]	1.9825	1.91625	1.885	1.8175	1.795
May 1, 1955[6]	1.9825	1.91625	1.885	1.8175	1.794
May 1, 1956	2.0825	2.01625	1.985	1.9175	1.894
Sept. 1, 1956	2.1825	2.11625	2.045	1.9775	1.924

[1] Plant work week reduced from 48 hours to 44 hours on May 1, 1950, then to 40 hours on November 1, 1950, with no change in weekly pay. Those weekly rates have been converted to straight time hourly rates.

[2] Night differential started. Premium of 5c per hour for time worked between 6 P.M. and 6 A.M. On May 1, 1953, this differential raised to 7½c per hour. This differential is in addition to above rates.

[3] Pension plan started. Deposit charge cost 5.8c per hour until May 1, 1954, since then 5.6c per hour.

[4] Premium pay for holiday work, longer paid vacations, after shorter term of service and pay for holidays not worked, are additional benefits paid by employer in addition to rates. Since 1953 these additional benefits cost approximately 8c per hour.

[5] 70 Day Blue Cross, Blue Shield provided, cost was 3.6c until June 1, 1956, since then 4.2c per hour.

[6] $5000.00 Group Life & $40.00 per week Sick Benefits provided, cost is 3.5c per hour. Rate has not changed.

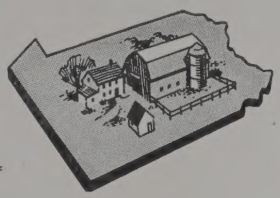
Source: Compiled by H. B. Steele from Contract of Milk and Ice Cream Salesmen, Drivers and Dairy Employees, Local Union No. 205 of Pittsburgh, Pennsylvania, affiliated with the International Brotherhood of Teamsters, Chauffeurs, Warehousemen and Helpers of America, American Federation of Labor.

margin, milk dealers have had to use labor more efficiently. Greater milk sales, improved techniques, particularly in processing, and consolidation of dealer businesses all have contributed to more efficiency. As a whole, however, milk dealers in Western Pennsylvania have not been able to maintain a rate of profit on investment equal to what they had in the first few years after the war.

Some farmers as well as some other members of our population look at the rise in wage rates of those marketing farm foods, and place the blame for falling farm prices and steady or rising food prices on union labor. While wage rates have increased faster than productivity in the processing and distribution of milk, nevertheless, an annual wage of between $4,000 - $4,500 is not necessarily more than adequate compensation for skilled labor. Living costs in cities have been increasing and involve expenses like transportation and meals away from home that not all families have to contend with. In 1955, the average U. S. family income, including more than one worker in many families, was $5,060 according to a survey reported by the Federal Reserve System.

Milk Reasonable Buy.—Likewise it should be pointed out that the present retail price of milk gives labor little to complain about. In 1947, pay for 40 hours of work by a skilled laborer in a milk plant would buy 239 quarts of milk. In 1955, the 40 hours of work would buy 325 quarts of milk delivered to homes, 339 quarts if bought in single quart units at stores and 346 quarts if bought at stores in two quart units. This change in buying power concerns cash wages only with no adjustment for either increased income taxes or for fringe benefits to the worker.

The SOIL BANK and Pennsylvania



FRED R. ROBERTSON*

ONE OBJECTIVE of the Soil Bank is to bring total production of crops now in surplus in line with market requirements. Another is to protect the income of producers of these crops while the adjustment is under way.

The direct benefits are for those farmers who participate. Farmers who do not participate may receive indirect benefits through higher prices as surpluses are reduced but prices of feed may also rise.

Approximately 12 million acres were "banked" in the acreage reserve either by under-planting or disposal of planted acres. However, the number of acres "banked" does not provide an accurate yardstick to measure the effect on total production. It is quite probable that many of the acres which were "banked" in the 1956 Acreage Reserve would not have produced a normal crop had they been carried to maturity. However, some reduction in supplies of eligible crops was achieved through operation of the program. Also, Soil Bank payments made a contribution to the increase in U. S. farm income during the year.

The change which was made in support prices for corn in conjunction with the Soil Bank proved to be an important factor in stabilizing corn prices. The national average support price for corn grown in commercial corn counties was $1.50 per bushel and in non-commercial counties $1.25 per bushel. The minimum support price for corn prevented prices from dropping much below that level. This helped to stabilize both corn and feed prices at a silghtly higher level than was the case in the previous year.

Other Benefits.—Certain other government programs operating in conjunction with the Soil Bank benefited farmers in Pennsylvania and the Northeast. Sizeable government purchases were made of turkeys, cheese, and eggs, which had some effect on prices in the Northeast. The price support level for milk and butterfat was also increased during the year. Compensatory payments to wool producers also helped the income situation. All these factors should be viewed when assessing the effects of the Soil Bank in 1956.

The effect of the Soil Bank on farmers in Pennsylvania and the Northeast in 1957 and subsequent years depends upon the degree of participation. If the supply of farm products can be reduced to a point that the supply is in line with market requirements, we can expect a proportionately greater increase in the price of those commodities. If such a reduction in supply takes place, it will mean an increase in feed costs for northeastern poultrymen and dairymen as well as any income advantages which they may receive from other Government Programs.

Barriers to Overcome.—There are two important barriers which the Soil Bank must overcome if its objectives are to be realized. One of these is the large stocks of wheat and corn now on hand. The other is that farmers may use Soil Bank payments to purchase fertilizers and to finance other improved practices which will lead to higher yields on land remaining in production.

Department of Agriculture officials have indicated that funds are available in 1957 to finance the "banking" of 13 to 15 million acres of wheat land and 4½ to 5½ million acres of corn land in the Acreage Reserve. This could result in a reduction of 175 to 200 million bushels of wheat and 175 to 225 million bushels of corn. A reduction such as that would be in the direction of bringing supplies in line with market demand but would still leave a long way to go.

Reductions for 1957.—The effect of the Soil Bank in 1957 will be in the direction of reducing supplies of feed grain. As long as surplus supplies of feed grains exist, feed prices will be influenced more by price support levels than by the Soil Bank. Governmental commodity disposal programs will play an important role in determining the effectiveness of the Soil Bank in 1957.

* Professor of Agricultural Economics Extension.

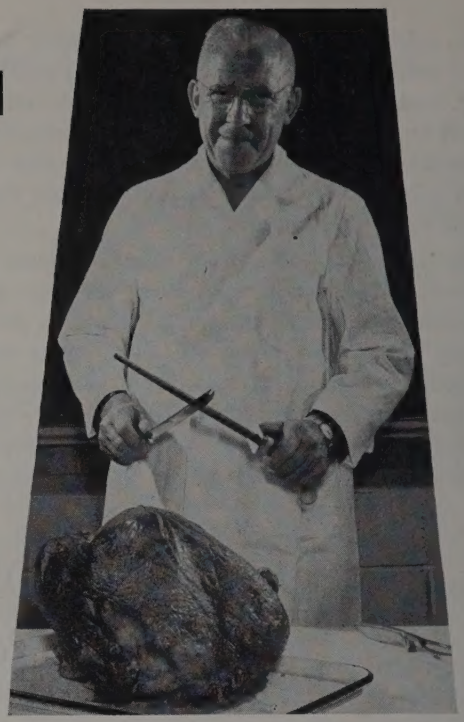
A PICTURE STORY

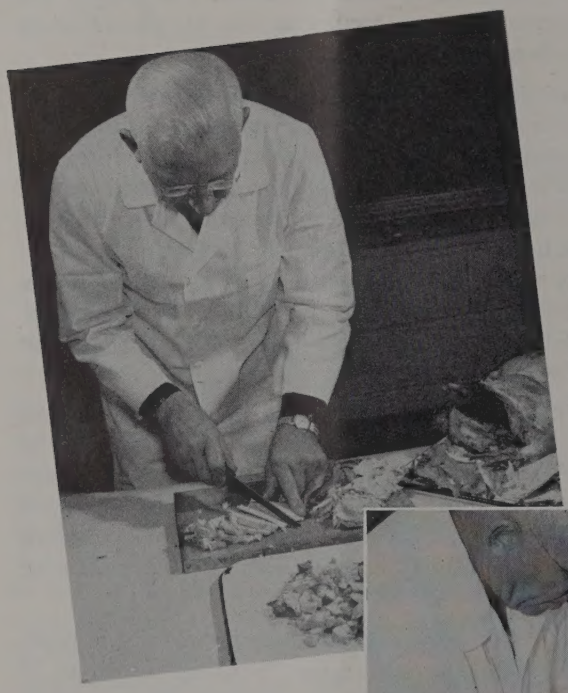
Surplus turkey goes MODERN

DEMAND for frozen turkey meat pies has increased tremendously in the last five years. The demand has helped take care of surplus turkey on the market, especially after holiday seasons. Frozen turkey pies are of two types: (1) turkey a la king all meat pies, and (2) regular pies with vegetable sauce. The latter are the biggest sellers since they cost less.

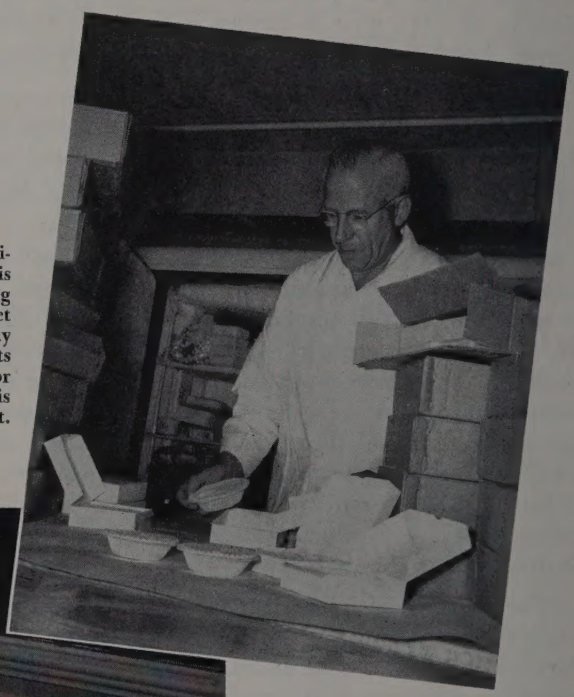
A new product under development by this Station is turkey sausage. Sausages use the less fleshy parts of the bird. Ground with seasoning, this meat can also be used for sandwich spreads or in salads. As yet turkey sausages are not as economical to produce as frozen turkey pies.

Paul H. Margolf, professor of poultry husbandry, displays these specialties.





Turkey sausages are still experimental. A filler and binder is one field of testing. Seasoning and smoking is another. To get commercial acceptance, some way must be found to keep unit costs down. There will be no need for sausages if all surplus meat is used in pies, Margolf points out.



Turkey meat is diced for pies. An 8-ounce pie has a 1-ounce crust, 2 or less ounces of diced meat and 5 ounces of vegetable sauce. Paul Margolf recommends roasting turkeys with plenty of water or boiling them when lots of juice for pies is desired.

Frozen pies are boxed for shipment. American families spend 7 or 8 billion dollars annually for foods and services. An increasing amount is now being spent for services going into the making of food items such as turkey pies.